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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/799,565	03/11/2004	David M. Roggeman	P00091US1B/FIRZ 2 00081-2	7785
27885 7590 04/30/2007 FAY SHARPE LLP 1100 SUPERIOR AVENUE, SEVENTH FLOOR CLEVELAND, OH 44114			EXAMINER MERKLING, MATTHEW J	
			ART UNIT 1709	PAPER NUMBER
			MAIL DATE 04/30/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/799,565

Applicant(s)

ROGEMAN ET AL.

Examiner

Matthew J. Merkling

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3/11/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

1. This application presents a claim for subject matter not originally claimed or embraced in the statement of the invention. The amendment to the originally filed specification contains a preferred range of bottom layer particles of 0.2-0.5 cm that was not contained in the originally filed parent application. Claim 5 also contains this preferred range with no support in the original disclosure. A supplemental oath or declaration is required under 37 CFR 1.67. The new oath or declaration must properly identify the application of which it is to form a part, preferably by application number and filing date in the body of the oath or declaration. See MPEP §§ 602.01 and 602.02.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

On page 7, line 27; the reference number 130 is not included in the drawings.

On page 8, lines 14-20; reference numbers 144, 146, 148, 150, 152, 156, 158, 160, 162, 164 and 170 are not included in the drawings.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended

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replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 27 and 28 recite the limitation "the source" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 17, 18, 20, 21, 26-29, and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Okada (JP 05-171164).

Regarding claim 17, Okada discloses an apparatus for humidifying a hydrocarbon stream (paragraph 8) comprising:

- a vessel (Drawing 1, (4)) which defines an interior cavity and having an inlet (2) adjacent a lower end of the cavity for receiving a hydrocarbon stream (paragraph 15);

- a bed of a packing material (8) in the cavity; and

- water filling at least a portion of the bed (paragraph 15).

Regarding claim 18, Okada further discloses a second inlet (11) in the vessel for adding water to the vessel (paragraph 15).

Regarding claim 20, Okada further discloses:

- a mixer (6) for mixing the humidified hydrocarbon stream with an unhumidified hydrocarbon stream to form a combined stream (paragraph 15, Drawing 1); and

- a sensor (7) for detecting a moisture content of at least one of the unhumidified hydrocarbon stream and the combined stream (paragraph 15).

Regarding claim 21, Okada further discloses an outlet through which the humidified hydrocarbon stream exits the vessel (see Drawing 1).

Regarding claim 26, Okada further discloses a source of the hydrocarbon stream fluidly connected with the inlet (see Drawing 1).

Regarding claim 27 and 28, the composition of the fluid entering the vessel does not add any structure to the claimed apparatus (see MPEP 2115), and therefore the claim continues to read on the device of Okada.

Regarding claim 29, Okada illustrates a head space in the vessel above the bed and the water to allow liquid water to separate from the gas stream (see Drawing 1).

Regarding claim 33, Okada discloses an apparatus for humidifying a hydrocarbon stream comprising:

a vessel (4) which defines an interior cavity, the vessel comprising a first inlet (2) adjacent a lower end of the cavity for receiving a hydrocarbon stream, a second inlet (11) for adding water to the vessel, and an outlet (see Drawing 1);

a bed (8) in the cavity, the bed comprising a packing material (paragraph 15) and water which fills a portion of the bed (paragraph 15); and

a head space in the cavity (see Drawing 1) above the bed which allows liquid water to fall out of the hydrocarbon stream.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (JP 05-171164) as applied to claim 17 above, and further in view of Smith, Jr. (US 5,446,223).

Regarding claim 19, Okada, as discussed in claim 17 above, discloses all of the claim limitations, but fails to teach a return line for returning a portion of a hydrocarbon stream which has been humidified to the cavity.

Smith also discloses an apparatus for the processing and subsequent measuring of a process variable.

Smith teaches a return line from the effluent line to the processing vessel (alkylation reactor) in order to reprocess the stream and control the olefin content of the effluent stream below a certain limit (col. 8 lines 59-64).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the return line structure of Smith in the humidification apparatus of Okada in order to control the humidification content of the effluent stream.

9. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (JP 05-171164) as applied to claim 17 above, and further in view of Yoneda et al. (US 5,123,836).

Regarding claim 25, Okada, as discussed in claim 17 above, discloses all of the claim limitations, but fails to teach the packing material comprising porcelain.

Yoneda also discloses an apparatus for gas/liquid contact.

Yoneda teaches the use of porcelain as a packed bed in order to efficiently conduct gas-liquid contact (col. 16 lines 49-51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the porcelain packing material of Yoneda in the humidifying apparatus of Okada in order to efficiently conduct gas-liquid contact.

10. Claims 22, 23, 24, 31 and 32 rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (JP 05-171164) in view of Holst et al. (US 5,650,128).

Regarding claims 22 and 23, Okada, as discussed in claim 17 above, discloses all of the claim limitations, but fails to teach the packing material is in the form of particles that are smaller adjacent a bottom of the bed than adjacent a top of the bed.

Holst also discloses a device for contacting a fluid stream with packing material.

Holst teaches particles on the bottom of the bed having a smaller diameter than particles on the top of the bed (see Fig. 1) in order to thoroughly mix the two components prior to reaching the larger particles and to allow the processing rate to be turned up or down without regard to fluid mechanics (col. 9 lines 57-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the smaller particles below the larger particles, as in Holst, in the packing bed of Okada in order to thoroughly mix the two components prior to reaching the larger particles and to allow the processing rate to be turned up or down without regard to fluid mechanics.

Regarding claim 24, it was well known in the art at the time of the invention that the size of the particles in the packing material has significant effect on the fluid distribution and mixing of the fluids in the vessel (Holst col. 12 lines 8-24), the size of the particles is not considered to confer patentability to the claim, as the size of the particles is a variable that can be modified, as is taught by Holst, to alter the flow distribution and mixing, the size of the particles would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed size of the particles cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the size of the particles in the modified Okada to obtain the desired mixing and flow distribution (In re Boesch, 617 F. 2d. 272,205 USPQ 215 (CCPA 1980)). Since it has been held that where general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (In re Aller, 105 USPQ 223).

Regarding claim 31, Okada discloses a humidification apparatus comprising:

- a vessel (4) which defines an interior cavity and having an inlet (2) adjacent a lower end of the cavity and an outlet adjacent an upper end of the cavity (see Drawing 1);

- a bed of a packing material (8) in the cavity, the packing material comprising particles which are larger in size toward an upper end of the bed;

- water filling a portion of the bed (paragraph 15); and

a head space (see Drawing 1) which spaces the outlet from the water and the packing material.

Okada fails to teach the packing material comprising particles which are larger in size toward an upper end of the bed.

Holst also discloses a device for contacting a fluid stream with packing material.

Holst teaches particles on the bottom of the bed having a smaller diameter than particles on the top of the bed (see Fig. 1) in order to thoroughly mix the two components prior to reaching the larger particles and to allow the processing rate to be turned up or down without regard to fluid mechanics (col. 9 lines 57-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the smaller particles below the larger particles, as in Holst, in the packing bed of Okada in order to thoroughly mix the two components prior to reaching the larger particles and to allow the processing rate to be turned up or down without regard to fluid mechanics.

Regarding claim 32, Okada, as discussed in claim 31 above, further discloses a liquid level gauge for adjusting the height of the water (paragraph 15).

11. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (JP 05-171164) as applied to claim 17 above, and further in view of Niwa et al. (4,705,654).

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Regarding claim 30, Okada, as discussed in claim 17 above, discloses all of the claim limitations, but fails to teach the particles are spherical.

Niwa also discloses an apparatus for humidification of a stream.

Niwa teaches spherical material (e.g. balls) are effecting packing material for a humidifying device (col. 5 lines 66-68).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the spherical packing material of Niwa with the humidification apparatus of Okada to utilize the effectiveness of spheres in humidification devices.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Merkling whose telephone number is 571-272-9813. The examiner can normally be reached on Monday - Friday 8:30-4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa D. Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



MJM



ALEXA D. NECKEL
SUPERVISORY PATENT EXAMINER